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ABSTRACT

The development of social maturity, language, and arithmetic abilities was studied over a 3-year period in 103 mentally retarded children from high IQ (51-75) and low IQ (26-50) groups in special schools and special classes. Among findings were that the high IQ groups of both special classes and special schools showed much improvement over the 3-year period; and that while the low IQ group in special schools greatly advanced in social maturity, the low IQ children in special classes developed better in language and arithmetic. (Author/SBH)

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The Followup Study on the Development of Mentally Retarded Children

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The Followup Study on the Development of Mentally Retarded Children

Abstract

We have followed the development of social maturity, language and arithmetic abilities of 103 mentally retarded children for 3 years. The differences of development between special school children and those of special classes was presented by comparing High-IQ(51-75) groups and Low-IQ(26-50) ones.

Special classes in regular schools and special schools are instituted in the present education system for handicapped children in Japan. Each of these schools includes children who live at home and those from residential institutions. The curriculum of the special classes in regular schools is different from that of special schools. In the special classes of regular schools in our city, the children are taught writing, reading, painting and so on, in accordance with concrete programs of daily life situations or of annual school programs, though the teaching method in these special classes somewhat varies according to the abilities of the children in each class. In the special schools, however, the emphsis is on adaptation to daily life, in addition to the special training for each child's handicaps. The number of special classes in one regular school is from 1 to 3, and the ratio of children to teacher is generally about 6:1. In special schools it is 4:1. As a rule, mildly retarded children attend special classes, and moderatly or severely retarded children attend special schools. But, in fact, overlapping does occur: Some special classes in regular schools include moderatly or severely handicapped children, while some special schools include mildly retarded children.

In this paper we will report the results of our 3-year followup study on the

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development of retarded children so as to clarify the differences between special class children and special school children in Japan.

Method

Our first investigation was made in 1973 and the second in 1976. The subjects are 103 mentally retarded children, 35 attending special classes in Kumamoto-city, and 68 going to 3 special schools. We made a new Social Maturity Scale, Language Scale and Arithmetic Scale by using various scales and consulting other references. Our Social Maturity Scale comprises 60 items from 1 to 15 year-levels (4 items for each year-level); our Language Scale has 44 items from 1 to 11 year-levels (4 items for each year-level), and our Arithmetic Scale contains 40 items from 1 to 12 (2 items for 1 and 2 year-levels, and 4 items for 3 to 12 year-levels). We changed the raw scores into developmental ages for each scale. The details of each scale were reported in our previous paper. Classroom teachers evaluated the abilities of the children, and for some children there were different evaluators in the cource of the second evaluation. We ourselves and our students applied the Suzuki-Binet Test as an intelligence test to almost all the children.

Results and Discussion

We compared the development of the High-IQ(51-75) group of children of special schools with that of the High-IQ group of special classes, and we did the same comparison with Low-IQ(26-50) groups. Analyses of variance were performed on the changes of MA, IQ, Social Maturity Age(SA), Language Age(LA), and Arithmetic Age(AA) over a 3 year period for these four groups. In spite of the different educational settings and intellectual levels, each group showed much improvement in all developmental ages except for IQ. In Tables 1 and 2, we presented the mean and SD

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of developmental ages, and also the differences between 1973's and 1976's result for each group. The frequency and percentage of the children who "passed" each item are presented in Tables 3,4, and 5. In these tables we listed only the items in which significant differences were observed. Because some children were not evaluated clearly, the percentage of "passed" children based on the number of evaluated children will occasionally seem to vary.

TABLES 1 - 5

Comparison of High-IQ groups

As presented in Table 1, a comparison was made of the development of educable retarded children in the two different types of schools. Though significant differences in the levels of development were observed in the two groups in our first evaluation, in the second evaluation the children of both groups showed advancement in their abilities in the three areas, especially in the development of their social maturity.

Special class children showed development in 6 categories of social maturity: ability to use a sharp knife or make simple handicrafts (items 4 and 7), ability to put away their bedclothes (item 12), ability to go shopping, work the telephon, and use public transportation by themselves (items 16, 18 and 19). Thus, it can be affirmed that High-IQ children in special classes did develop their adaptation abilities to the community. This is partly due to the fact the number of the children in special classes who live at home is larger than that in special schools. By comparison, the special school children showed development in the sport category, especially in group sports such as baseball. Perhaps one reason is that the large number of children who are residents of institutions makes participation in group games easy.

There was not much difference in language ability between the two groups, but the

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children of both groups did improve in reading (item 9).

Special class children showed a tendency to improve in 7 items in arithmetic, but no one could reach a 9 year-level.

Comparison of Low-IQ groups

A strict comparison of Low-IQ groups could not be made because the number of the subjects was different according to the group. As shown in Table 2, Low-IQ children in special schools made great progress in social maturity. But in LA and AA, special class children advanced more than those in special schools. The curriculum of the special classes, which stresses academic achievement, may have effected the result.

Low-IQ children in special schools showed significant development in 14 categories of social maturity, in 8 categories of language, and 5 categories of arithmetic. In certain categories of social maturity, some children even reached 12 and 13 year-levels, for example, in personel appearance (items 15 and 17). About 45% of the special school Low-IQ children have come to understand the differences between common expressions and polite ones (item 10). Also, they made progress in counting up to 100 (items 1,2, and 6) and in putting marbles in simple shapes (items 3 and 4) in arithmetic.

Conclusion

The High-IQ groups of both special classes and special schools showed much improvement over the 3 year period. Though High-IQ subjects in special classes were expected to have developed more than those in special schools, no statistical differences were observed. Considering the many problems of the present special classes -- such as the wide range of the children's ability in one class and only

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one teacher being in charge of a class which includes severely handicapped children -- we should try to reorganize such special classes for mildly retarded children only. When we solve these problems, we can expect more effective education for retarded children.

Though the small number of Low-IQ subjects in the special classes groups makes a statistically ideal result impossible, still, for Low-IQ groups it may be concluded that while the Low-IQ group of special schools greatly advanced in social maturity, the Low-IQ children of special classes developed in language and arithmetic. The various curriculums of the two educational settings might be a cause of the result.

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Table 1 Development of High-IQ (51-75) Subjects during 3 Years

	Special School N=21(14,7)			Special Class N=23(14,9)		
	1973	1976	D t'test	1973	1976	D t'test
CA	109.2 (27.3)	146.6 (27.8)		120.1 (18.9)	156.9 (19.2)	
MA	65.4a (18.2)	82.5 (21.1)	+17.1***	76.8a (16.9)	91.3 (19.1)	+14.5***
IQ	60.1 (6.0)	57.2 (12.0)	-2.9	63.6 (7.5)	59.1 (9.6)	-4.5***
SA	85.7 (35.1)	108.4 (34.1)	+22.7***	106.3 (36.6)	129.6 (35.2)	+23.3***
LA	62.7a (26.3)	76.0 (25.7)	+13.3***	83.4a (27.0)	94.8 (23.0)	+11.4**
AA	51.7a (21.6)	65.2b (19.7)	+13.5***	65.1a (16.6)	77.0b (15.4)	+11.9***

( ) SD

*** $p < .001$ ** $p < .01$ * $p < .05$

a,b significant difference was observed between a and a, and between b and b on the same line.

Table 2 Development of Low-IQ (26-50) Subjects during 3 Years

	Special School N=47(25,22)			Special Class N=12(10,2)		
	1973	1976	D t'test	1973	1976	D t'test
CA	130.6 (31.0)	162.3 (25.0)		123.7 (27.4)	153.9 (19.1)	
MA	49.5 (14.5)	60.5 (16.3)	+11.0***	47.0 (10.9)	57.3 (16.3)	+10.3*
IQ	38.9 (6.0)	37.7 (9.1)	-1.2	39.0 (7.7)	38.8 (12.3)	-0.2
SA	64.3 (28.7)	87.0 (28.6)	+22.7***	67.0 (22.5)	83.2 (29.3)	+16.2*
LA	42.6 (21.4)	52.6 (20.2)	+10.0***	43.8 (20.6)	58.9 (24.4)	+15.1***
AA	40.0 (18.9)	48.9 (19.0)	+8.9***	38.8 (13.9)	51.3 (17.9)	+12.5*

Table 3 Development of Social Maturity

		High IQ (51-75)						Low IQ (26-50)			
		Special School N=21			Special Class N=23			Special School N=47			Special Class N=12
		1973	χ^2 test	1976	1973	χ^2 test	1976	1973	χ^2 test	1976	1973 χ^2 test 1976
5 yr	1) sometimes fold up his bedclothes or sweep the garden							29 (63.0)	***	42 (93.3)	
6 yr	2) cut his nails							16 (35.6)	*	27 (57.4)	
	3) get a ride in vehicle in good order and keep to the right							17 (37.0)	*	28 (60.9)	
7 yr	4) safe even with a sharp knife in his hands				9 (40.9)	+	15 (68.2)	7 (15.6)	**	18 (40.0)	
	5) sometimes shut or open the shutters and clean his room							12 (27.9)	***	32 (68.1)	
8 yr	6) cross the road according to the traffic signal							15 (34.1)	**	30 (65.2)	5 (41.7) + 9 (90.0)
	7) make a simple handicraft with wood or bamboo				5 (25.0)	*	15 (68.2)	3 (6.8)	+	11 (23.9)	
	8) play catch or dodge ball	9 (42.9)	+	15 (71.4)				5 (11.1)	**	18 (40.9)	
9 yr	9) use a saw or hammer							4 (9.1)	**	15 (34.9)	
	10) avail himself alone of any vehicle				9 (39.1)	*	18 (78.3)				
	11) play chess or cards							3 (6.8)	+	11 (23.4)	
10 yr	12) put away his bedclothes everyday				13 (61.9)	*	20 (95.2)	19 (43.2)	***	37 (78.7)	
11 yr	13) do simple productive work (cooking, sewing, keeping pets)							6 (14.0)	+	14 (29.8)	
12 yr	14) play baseball, tennis or cards according to the rules	4 (19.0)	**	14 (66.7)							
	15) care about his dress and looks	5 (23.8)	+	12 (57.1)				9 (22.0)	*	22 (46.8)	
	16) buy his personal properties such as underwears, gloves, shoes				0 (0.0)	*	8 (36.4)				
13 yr	17) capable of changing or being tidy of his clothes according to the weather or to the places he gose							2 (4.9)	*	12 (26.1)	
	18) capable of calling the stores his friends or his acqaintances in the city				2 (10.5)	*	11 (50.0)				

+ $0.05 < p < 0.1$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 4 Development of Language Ability

		High IQ (51-75)				Low IQ (26-50)			
		Special School N=21		Special Class N=23		Special School N=47		Special Class N=12	
		1973	χ^2 test	1973	χ^2 test	1973	χ^2 test	1973	χ^2 test
3 yr	1) tell most of the objects in picture books					20 (44.4)	***	37 (78.7)	
	2) play telephoning					18 (39.1)	**	33 (70.2)	
4 yr	3) understand the meanings of more than four words among on, in, under, behind, [illegible]ide					23 (52.3)	+	32 (69.6)	
	4) [illegible]ow the names of the 7 days of a week					22 (47.8)	+	31 (67.4)	3 (30.0) + 9 (75.0)
	5) talk with his friends about the programs on TV he has watched					12 (26.1)	*	22 (46.8)	
6 yr	6) tell mostly what day of the week it is today					15 (33.3)	*	25 (55.6)	2 (16.7) + 7 (58.3)
	7) use few infant words					16 (34.8)	*	26 (55.3)	
	8) understand funnies	9 (42.9)	+ 15 (75.0)						
	9) read easy books with no pictures on	7 (35.0)	* 15 (71.4)	13 (59.1)	+ 20 (87.0)				
7 yr	10) find out two ways talking: common expressions and polite ones			12 (54.5)	+ 19 (82.6)	9 (20.9)	*	20 (42.6)	

Table 5 Development of Arithmetic Ability

	High IQ (51-70)				Low IQ (26-50)			
	Special School N=21		Special Class N=23		Special School N=47		Special Class N=12	
	1973	χ^2 test 1976	1973	χ^2 test 1976	1973	χ^2 test 1976	1973	χ^2 test 1976
3 yr 1) count aloud 1 to 10		ns			28 (59.6)	* 37 (78.7)		ns
4 yr 2) capable of counting one doll, two dolls, and three dolls					18 (39.1)	+ 26 (56.5)		
4 yr 3) put 10 marbles in a straight line					21 (47.7)	** 35 (76.1)		
4 yr 4) put marbles as follows					16 (35.6)	* 29 (61.7)		
5 yr 5) count aloud from 1 to 100			11 (47.8)	* 18 (81.8)				
6 yr 6) count aloud decimally from 10,20,30,... to 100					2 (4.5)	* 10 (21.7)		
6 yr 7) connect the figure 9 with real materials like nine apples			15 (65.2)	+ 21 (91.3)				
6 yr 8) capable of adding under ten without moving up			12 (54.5)	+ 19 (82.6)				
7 yr 9) count moving up or down			5 (23.8)	+ 12 (54.5)				
7 yr 10) know the system of multiplication and the use of it			1 (4.3)	+ 6 (27.3)				
8 yr 11) know the system of division and the simple use of it			0 (0.0)	+ 5 (21.7)				
8 yr 12) capable of measuring length, weight or size			1 (5.6)	+ 7 (31.8)				